

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law, (Chapter 644 R.S. Mo. as amended, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No. MO-0098001

Owner: Ameren UE
Address: One Ameren Plaza, 1901 Chouteau Street, PO Box 66149, MC-602, St. Louis, MO 63166-6149

Continuing Authority: Same as above
Address: Same as above

Facility Name: Ameren UE, Callaway Power Plant
Address: PO Box 620, Fulton, MO 65251

Legal Description: See page 2

Receiving Stream: See page 2
First Classified Stream and ID: See page 2
USGS Basin & Sub-watershed No.: See page 2

is authorized to discharge from the facility described herein, in accordance with the effluent limitations and monitoring requirements as set forth herein:

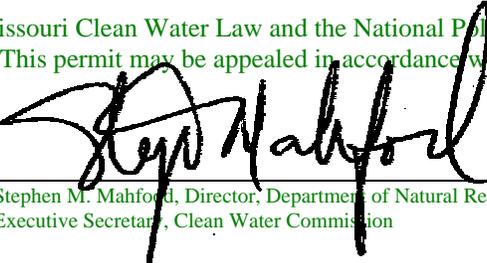
FACILITY DESCRIPTION

The Callaway Power Plant has a combined daily average flow of 9.484 MGD and a daily maximum flow of 72.249 MGD.

Outfall #001 - Radwaste Treatment System - SIC #4911
Daily average flow is 0.082 MGD.
Daily maximum flow is 0.298 MGD.

This permit authorizes only wastewater discharges under the Missouri Clean Water Law and the National Pollutant Discharge Elimination System; it does not apply to other regulated areas. This permit may be appealed in accordance with Section 644.051.6 of the Law.

October 3, 2003
Effective Date



Stephen M. Mahford, Director, Department of Natural Resources
Executive Secretary, Clean Water Commission

October 2, 2008
Expiration Date
MO 780-0041 (10-93)

Jim Hull, Director of Staff, Clean Water Commission

FACILITY DESCRIPTION (continued)

This system serves to collect, process, store, recycle and dispose of liquid radioactive waste generated at Callaway. Five general sub-systems can be defined as described below.

The Boron Recycle System receives reactor coolant for the purpose of recovering the boric acid for reuse in the plant. Boric acid is used as a neutron absorber/moderator in the primary loop.

The Liquid Radwaste System collects and processes floor and equipment drains from the containment, auxiliary building, fuel building and radwaste buildings during normal operation.

The Laundry and Hot Shower system collects waste generated from washing radioactively contaminated protective gear and clothing and personnel decontamination shower wastewater. These wastes are then transferred to the liquid Radwaste system for treatment.

The Secondary Liquid Waste system is used to process condensate and steam generator blowdown demineralizer regeneration wastes and potentially radioactive liquid waste collected from the turbine building. The condensate demineralizer regeneration waste is divided into two wastestreams; High TDS waste from the acid and caustic rinses used when chemically regenerating spent resin, and low TDS waste which results from the initial backflushing of unregenerated resin and the final rinsing of the regenerated resin to remove acid and caustic.

Steam Generator Blowdown is normally recycled back to the main condenser for reuse in the secondary cycle. Provisions also exist to discharge the treated blowdown via #001. The following wastewater treatment systems are used as required to treat this wastestream for recycle or discharge in compliance with NRC requirements and are also available as auxiliary or backup treatment systems to treat this discharge for compliance with NPDES permit limitations: Evaporation and/or Mixing and/or Filtration and/or Carbon Absorption and/or Ion Exchange and/or Neutralization and/or Reuse/Recycle of Treated Effluent. All processing in the Radwaste Treatment System is done on a batch basis except steam generator blowdown. After monitoring for radioactive content, release rates are controlled administratively to ensure the "as low as practicable" radioactive discharge criteria are met.

Outfall #002 - Cooling Tower Blowdown

Daily average flow is 4.84 MGD.

Daily maximum flow is 14.4 MGD.

This outfall consists of water from the Circulating Water System, the Service Water System, and the Essential Service Water (ESW) System. Blowdown from the cooling tower is necessary to maintain the dissolved solids concentration in the recirculating water system within acceptable operating limits. The ESW System is not routinely used, however water from the ESW System does mix with the other systems as it is periodically run to demonstrate operability. Additionally, the ESW System can be used to maintain proper freeboard in the ultimate heat sink pond (see Outfall #017 description) by transferring water to the Service Water System.

Outfall #003 - Water Treatment Plant Wastes

Daily average flow is 0.421 MGD.

Daily maximum flow is 1.645 MGD.

(These flows represent wastewater discharged to the settling basin, actual discharge will vary depending on recycle.) Outfall #003 consists supernatant from a wastewater treatment lagoon that treats wastewater to remove solids. The wastewater that is treated in the lagoon is mainly from the blowdown of accumulated river solids in the water treatment plant clarifiers. The sand and carbon filter backwash, oil water separator and demineralizer system wastewater is also routed to this treatment lagoon. The oil water separator flow consists of wastewater from some plant sumps as well as flow from an oil recovery well that is being used to remediate a historic on-site release. Outfall #003 is normally recycled by routing it back to the head of the water treatment plant.

FACILITY DESCRIPTION (continued)

Outfall #004 - Demineralizer System Wastes

This discharge is now included under Outfall #003.

Outfall #007 - 3 Cell Flow Through Lagoon

Daily average flow is 0.027 MGD.

Maximum flow is 0.040 MGD.

Design Population Equivalent is 400.

This outfall consists of a 3-cell lagoon designed to receive only sanitary and on-site cafeteria waste from the plant. Sludge will be stored in the lagoon. The effluent will then be discharged to a constructed wetland. The monitoring location will be at the discharge from the wetland.

Outfall #009 - Intake Heater Blowdown

Daily average flow 0 MGD.

Daily maximum flow is 0.006 MGD.

The river intake structure contains two recirculating electric heaters which are used to prevent ice formation on the intake bar screens during the winter months. Outfall #009 consists of discharges from the infrequent blowdown or drainage of these boilers.

Outfalls #010 through #015 - Storm Water Runoff

Average rainfall event is 0.794 MGD.

Once in 10 year rainfall event is 41.46 MGD.

These six outfalls discharge storm water runoff from plant and associated areas after treatment in settling ponds. "Non-process" discharges that will be discharged to SWR include three intermittent sources. Two sources are the quarterly testing of the fire protection drains and the infrequent draining of the demineralized water storage tank. The third source is the pumping of manholes, transformer and tank containments at the plant.

Outfall #016 - Cooling Tower Bypass

Daily average flow is 3.32 MGD.

Maximum daily flow is 14.4 MGD.

This outfall consists of clarified river water and wastewater that has been recycled through the water treatment plant. It is used to moderate flow through the water treatment plant and to provide carrier water in the discharge line when discharging from Outfall #001.

Outfall #017 - Ultimate Heat Sink

Daily average flow is 0 MGD.

The Ultimate Heat Sink is a cooling pond that can provide cooling water to various plant systems during other than normal conditions. Outfall #017 is the overflow from the Ultimate Heat Sink to local runoff. It is a no discharge outfall.

LEGAL DESCRIPTION (continued)

Outfall #001: (Piped to Missouri River)

Legal Description: NE $\frac{1}{4}$, NE $\frac{1}{4}$, Sec. 14, T46N, R8W, Callaway

Latitude/Longitude: +3845424/-09146462

Receiving Stream: Missouri River (P)

First Classified Stream and ID: Missouri River (P) (00701)

USGS Basin & Sub-watershed No.: (10300102-28004)

Outfall #002: (Piped to Missouri River)

Legal Description: NW $\frac{1}{4}$, NW $\frac{1}{4}$, Sec. 13, T46N, R8W, Callaway

Latitude/Longitude: +3845459/-09146388

Receiving Stream: Missouri River (P)

First Classified Stream and ID: Missouri River (P) (00701)

USGS Basin & Sub-watershed No.: (10300102-28004)

LEGAL DESCRIPTION (continued)

Outfall #003: (Piped to Missouri River)

Legal Description: SW $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 13, T46N, R8W, Callaway
Latitude/Longitude: +3845065/-09146409
Receiving Stream: Missouri River (P)
First Classified Stream and ID: Missouri River (P) (00701)
USGS Basin & Sub-watershed No.: (10300102-28004)

Outfall #007: (Piped to Missouri River)

Legal Description: SW $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 13, T46N, R8W, Callaway
Latitude/Longitude: +3845123/-09146318
Receiving Stream: Missouri River (P)
First Classified Stream and ID: Missouri River (P) (00701)
USGS Basin & Sub-watershed No.: (10300102-28004)

Outfall #009: (Located Right on Missouri River)

Legal Description: NW $\frac{1}{4}$, NW $\frac{1}{4}$, Sec. 5, T45N, R7W, Callaway
Latitude/Longitude: +3842127/-09146185
Receiving Stream: Missouri River (P)
First Classified Stream and ID: Missouri River (P) (00701)
USGS Basin & Sub-watershed No.: (10300102-28004)

Outfall #010:

Legal Description: SW $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 12, T46N, R8W, Callaway
Latitude/Longitude: +3846088/-09146261
Receiving Stream: Unnamed Tributary to Logan Creek (U)
First Classified Stream and ID: Logan Creek (C) (00704)
USGS Basin & Sub-watershed No.: (10300102-28004)

Outfall #011:

Legal Description: NW $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 12, T46N, R8W, Callaway
Latitude/Longitude: +3846105/-09146002
Receiving Stream: Unnamed Tributary to Logan Creek (U)
First Classified Stream and ID: Logan Creek (C) (00704)
USGS Basin & Sub-watershed No.: (10300102-28004)

Outfall #012:

Legal Description: NE $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 14, T46N, R8W, Callaway
Latitude/Longitude: +3845168/-09146531
Receiving Stream: Tributary to Mud Creek (U)
First Classified Stream and ID: Logan Creek (C) (00704)
USGS Basin & Sub-watershed No.: (10300102-28004)

Outfall #013:

Legal Description: NE $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 14, T46N, R8W, Callaway
Latitude/Longitude: +3845189/-09146579
Receiving Stream: Tributary to Mud Creek (U)
First Classified Stream and ID: Logan Creek (C) (00704)
USGS Basin & Sub-watershed No.: (10300102-28004)

Outfall #014:

Legal Description: NW $\frac{1}{4}$, SE $\frac{1}{4}$, Sec. 11, T46N, R8W, Callaway
Latitude/Longitude: +3846128/-09147052
Receiving Stream: Cow Branch (U)
First Classified Stream and ID: Cow Creek (C) (00707)
USGS Basin & Sub-watershed No.: (10300102-28003)

LEGAL DESCRIPTION (continued)

Outfall #015:

Legal Description: SE $\frac{1}{4}$, NE $\frac{1}{4}$, Sec. 11, T46N, R8W, Callaway
Latitude/Longitude: +3846232/-09146506
Receiving Stream: Cow Branch (U)
First Classified Stream and ID: Cow Creek (C) (00707)
USGS Basin & Sub-watershed No.: (10300102-28003)

Outfall #016: (Piped to Missouri River)

Legal Description: NW $\frac{1}{4}$, NW $\frac{1}{4}$, Sec. 13, T46N, R8W, Callaway
Latitude/Longitude: +3846128/-09147052
Receiving Stream: Missouri River (P)
First Classified Stream and ID: Missouri (P) (00701)
USGS Basin & Sub-watershed No.: (10300102-28004)

Outfall #017:

Legal Description: SE $\frac{1}{4}$, NE $\frac{1}{4}$, Sec. 14, T46N, R8W, Callaway
Latitude/Longitude: +3845363/-09146441
Receiving Stream: Unnamed Tributary to Logan Creek (U)
First Classified Stream and ID: Logan Creek (C) (00704)
USGS Basin & Sub-watershed No.: (10300102-28004)
This is a no-discharge outfall.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

PERMIT NUMBER MO-0098001

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #001 - Radwaste System</u>						
Flow	MGD	*		*	once/daily each batch	each batch total
Boron, Total Recoverable	mg/L	*		*	once/daily each batch	grab
Total Suspended Solids	mg/L	45		30	once/daily each batch	grab
Oil and Grease	mg/L	20		15	once/month	grab
Biochemical Oxygen Demand ₅	mg/L	*		*	once/month	grab
pH - Units	SU	**		**	once/daily each batch	grab
Total Residual Chlorine	µg/L	190		*	once/month	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE January 28, 2004. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I & III STANDARD CONDITIONS DATED October 1, 1980 and August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

PERMIT NUMBER MO-0098001

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The interim effluent limitations shall become effective upon issuance and remain in effect until December 31, 2004. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #002 - Cooling Tower Blowdown</u>						
Flow	MGD	*		*	once/day	24 hr. total
Total Suspended Solids	mg/L	*		*	once/week	grab
Total Dissolved Solids	mg/L	*		*	once/week	grab
Oil and Grease	mg/L	20		15	once/quarter***	grab
Temperature	°F	110		*	once/day	grab
Free Available Chlorine	mg/L	0.2			once/day	grab
pH - Units	SU	****		****	continuous	24 hr. recorder
Sulfate	mg/L	*		*	once/quarter***	grab
Total Residual Chlorine	µg/L	*		*	once/day	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE January 28, 2004. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I & III STANDARD CONDITIONS DATED October 1, 1980 and August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

PERMIT NUMBER MO-0098001

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective January 1, 2005 and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #002 - Cooling Tower Blowdown</u>						
Flow	MGD	*		*	once/day	24 hr. total
Total Suspended Solids	mg/L	*		*	once/week	grab
Total Dissolved Solids	mg/L	*		*	once/week	grab
Oil and Grease	mg/L	20		15	once/quarter***	grab
Temperature	°F	110		*	once/day	grab
Total Residual Chlorine	µg/L	190			once/day	grab
pH - Units	SU	****		****	continuous	24 hr. recorder
Sulfate	mg/L	*		*	once/quarter***	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE January 28, 2004. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I & III STANDARD CONDITIONS DATED October 1, 1980 and August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfall #003</u> - Water Treatment Plant						
Flow	MGD	*		*	once/week	24 hr. total
Total Suspended Solids	mg/L	100		30	once/month	grab
Oil and Grease	mg/L	20		15	once/month	grab
Total Residual Chlorine	µg/L	190		*	once/month	grab
pH - Units	SU	**		**	once/month	grab
<u>Outfall #004</u> - Demineralizer System (Now included under Outfall #003)						
<u>Outfall #007</u> - Sanitary Waste						
Flow	MGD	*		*	once/quarter***	24 hr. estimate
Biochemical Oxygen Demands	mg/L		65	45	once/quarter***	grab
Total Suspended Solids	mg/L		110	70	once/quarter***	grab
pH - Units	SU	**		**	once/quarter***	grab
<u>Outfall #009</u> - Intake Heater Blowdown						
Flow	MGD	*		*	once/week when discharge occurs	24 hr. total
Total Suspended Solids	mg/L	100		30	once/week when discharge occurs	grab
Oil and Grease	mg/L	20		15	once/week when discharge occurs	grab
pH - Units	SU	**		**	once/week when discharge occurs	grab

MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE January 28, 2004.

Composite of Outfalls #001, #002, #003, #007, #009 & #016 at the Missouri River or a flow weighted composite

Whole Effluent Toxicity (WET) Test (Note 1)	% Survival	See Special Conditions	once/year	24 hr. composite
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MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY; THE FIRST REPORT IS DUE October 28, 2004. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

B. STANDARD CONDITIONS

IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED Parts I & III STANDARD CONDITIONS DATED October 1, 1980 and August 15, 1994, AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS					PAGE NUMBER 10 of 16	
					PERMIT NUMBER MO-0098001	
The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective upon issuance and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:						
OUTFALL NUMBER AND EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
<u>Outfalls #010 through #015</u>						
Flow	MGD	*		*	*****	24 hr. total
Total Suspended Solids	mg/L	*		*	once/quarter***	grab
Oil and Grease	mg/L	20		15	once/quarter***	grab
Chemical Oxygen Demand	mg/L	*		*	once/quarter***	grab
pH - Units	SU	*****		*****	once/quarter***	grab
Special one time monitoring requirements						
<u>Outfall #002</u> Asbestos	fibers/L	*		*	once/during first year of permit	grab
<u>Outfall #001</u> Monoethanolamine (cas 141-43-5)	mg/L	*		*	once/during first year of permit	grab
<u>Outfall #016</u>						
Flow	MGD	*		*	once/quarter***	24 hr. estimate
Total Suspended Solids	mg/L	100		30	once/quarter***	grab
Oil and Grease	mg/L	20		15	once/quarter***	grab
Total Residual Chlorine	µg/L	190		*	once/quarter***	grab
pH - Units	SU	**		**	once/quarter***	grab
MONITORING REPORTS SHALL BE SUBMITTED <u>QUARTERLY</u> ; THE FIRST REPORT IS DUE <u>January 28, 2004</u> . THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
B. STANDARD CONDITIONS						
IN ADDITION TO SPECIFIED CONDITIONS STATED HEREIN, THIS PERMIT IS SUBJECT TO THE ATTACHED <u>Parts I & III</u> STANDARD CONDITIONS DATED <u>October 1, 1980</u> and <u>August 15, 1994</u> , AND HEREBY INCORPORATED AS THOUGH FULLY SET FORTH HEREIN.						

MO 780-0010 (8/91)

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

- * Monitoring requirement only.
- ** pH is measured in pH units and is not to be averaged. The pH is limited to the range of 6.0-9.0 pH units.
- *** Sample once per quarter in the months of February, May, August, and November.
- **** Permittee shall maintain the pH between 6.0 - 9.0 except excursions from the range are permitted subject to the following limitations:

1. The total time during which the pH values are outside the required range of pH values shall not exceed 7 hours and 26 minutes in any calendar month; and
2. No individual excursion from the range of pH values shall exceed 60 minutes.

Monitoring reports shall show each excursion, the duration of the excursion, and the total excursion time for each month. Should the continuous monitor fail for any reason, daily grab samples shall be provided until repairs are completed.

- ***** Discharge quantities can be calculated from rainfall records for the reporting period or measured during each discharge event.
- ***** pH is measured in pH units and is not to be averaged. The pH is to be maintained at or above 6.0 pH units.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS (continued)

Note 1 - WET Test must coincide with resumption of discharge after application of molluscicide. Sample taken for WET Test should be representative of a molluscicide dosing event. If no molluscicide is used by November 2, use November as sampling month. Report in December.

Outfall #017 - Ultimate Heat Sink

There shall be no discharge of wastewater from this outfall to waters of the state of Missouri.

C. SCHEDULE OF COMPLIANCE

By December 30, 2003 Ameren UE must either install adequate groundwater monitoring wells near reactor building or demonstrate to Missouri Department of Natural Resources that such wells are not needed.

D. SPECIAL CONDITIONS

1. In issuing this permit, the Missouri Clean Water Commission and the Missouri Department of Natural Resources has not determined whether or not the radioactive discharges from this plant will affect waters of the state. Radioactive discharges are the responsibility of the Nuclear Regulatory Commission, and any discharges of these constituents will be under the NRC's regulation.
2. Discharge Limitations - There shall be no discharge of polychlorinated biphenyl compounds.
3. Pesticides
Any pesticide discharge from any point source shall comply with the requirements of the Federal Insecticide, Fungicide, and Rodenticide Act, as amended (7W.S.C. 136 et. seq.) and the use of such pesticides shall be in a manner consistent with its label.
4. This permit may be reopened and modified, or alternatively revoked and reissued, to:
 - (a) Comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a) (2) of the Clean Water Act, if the effluent standard or limitation so issued or approved:
 - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
 - (2) controls any pollutant not limited in the permit.
 - (b) Incorporate new or modified effluent limitations or other conditions, if the result of a waste load allocation study, toxicity test or other information indicates changes are necessary to assure compliance with Missouri's Water Quality Standards.
 - (c) Incorporate new or modified effluent limitations or other conditions if, as the result of a watershed analysis, a Total Maximum Daily Load (TMDL) limitation is developed for the receiving waters which are currently included in Missouri's list of waters of the state not fully achieving the state's water quality standards, also called the 303(d) list.

The permit as modified or reissued under this paragraph shall also contain any other requirements of the Clean Water Act then applicable.

D. SPECIAL CONDITIONS (continued)

5. The permittee shall conduct the following radiological monitoring:

a. Liquid Radwaste discharge, surface water and drinking water supply:

<u>LOCATION</u>	<u>FREQUENCY</u>	<u>SAMPLE TYPE</u>
I. Radwaste building discharge		
a) Batch Releases	daily	a representative grab sample of each batch discharge
b) Steam Generator Blowdown	once per day when discharging	a representative grab sample
II. Upstream of discharge line	once/month	grab
III. Downstream of discharge line at Portland, MO	daily with monthly composite analysis	composite

Samples of Batch Releases are to be analyzed for tritium, I-131, and gamma isotopic for each batch; gross alpha in a monthly composite of each batch; and for Sr-89, Sr-90, and Fe-55 in a quarterly composite of each batch.

Samples of Steam Generator Blowdown are to be analyzed for tritium, I-131, and gamma isotopic in daily samples; gross alpha in a monthly composite of daily samples; and for Sr-89, Sr-90, and Fe-55 in a quarterly composite of daily samples.

Samples of Surface Water are to be analyzed for tritium and gamma isotopic in monthly samples.

- b. Aquatic biota - semiannual sampling of the edible flesh of up to five commercially or recreationally important species of fish of sufficient quantity to yield a sufficient sample. Samples are to be taken at the locations specified in II and III. Samples are to be analyzed by gamma isotopic analysis. Catfish need not be included in sample.
- c. Bottom Sediment - semiannual samples of bottom sediment from the locations specified in II and III. Samples are to be analyzed by gamma isotopic analysis.
- d. Results of the above monitoring programs shall be reported to the Department by supplying a copy of the Annual Radiological Environmental Operating Report per Technical Specification 5.6.2 and the Annual Radioactive Effluent Release Report per Technical Specification 5.6.3 at the same time they are supplied to NRC. All data information shall be available for inspection during normal working hours.
- e. The Department of Natural Resources of the State of Missouri, and any other state agency or officer designated in the State's emergency response plan or any other plan to protect its citizens from radioactive liquid discharge from the Callaway Plant, shall receive within one hour of the event, notice of any unplanned or uncontrolled liquid radioactive release in accordance with 10 CFR 50.72(a) and notification of reportable events per 10 CFR 20.2203 that involve off-site releases of liquid radioactive material.

D. SPECIAL CONDITIONS (continued)

6. Changes in Discharges of Toxic Substances

The permittee shall notify the Director as soon as it knows or has reason to believe:

- (a) That any activity has occurred or will occur which would result in the discharge of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
 - (1) One hundred micrograms per liter (100 µg/L);
 - (2) Two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,5 dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
 - (3) Five (5) times the maximum concentration value reported for the pollutant in the permit application;
 - (4) The level established in Part A of the permit by the Director.
- (b) That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant, which was not reported in the permit application.

7. Permittee is exempt from section 311 and superfund reporting under 40CFR117.12(a)1-3 for the following chemicals: Ammonium Hydroxide, Boric Acid, Dispersants, Ethylene Glycol, Hydrazine, Hydrogen Peroxide, Lithium Hydroxide, Nitrate/Borate Products, Coagulants, Sodium Hydroxide, Sodium Hypochlorite, Sodium Molybdate, Sodium Sulfate, Sodium Tolytriazole, Sulferic Acid, Monoethanolamine, Sodium Bromide, Titanium Dioxide, (1-Hydroxythylidene) diphosphonic acid, Potassium Hydroxide (HEDP), Dimethylamide (DMAD), Phosphoric Acid, Glutheraldehyde, Diethylhydroxylamine (DEHA), Proprietary Methylene Bis based biocide, and Proprietary Quaternary ammonium compound.

8. The 316 (B) study was done in 1984 and 1986. Since there have been no changes to the intake structure, the study is approved for this permit cycle.

9. Whole Effluent Toxicity (WET) tests will be conducted as follows:

SUMMARY OF WET TESTING FOR THIS PERMIT					
OUTFALL	LIMIT	A.E.C. %	FREQUENCY	SAMPLE TYPE	MONTH
#001, #002, #003, #007, #009 & #016 combined at the River Discharge	Insignificant Mortality	10%	Annually, when molluscicide is used	24 hr. composite	Any but report in December

(a) Test Schedule and Follow-Up Requirements

- (1) Perform a single-dilution test in the months and at the frequency specified above. If the effluent passes the test, do not repeat the test until the next test period.
 Submit test results along with complete copies of the test reports as received from the laboratory within 30 calendar days of availability to the WPCP, Planning Section, P.O. Box 176, Jefferson City, MO 65102.
- (2) If the effluent fails the test, a multiple dilution test shall be performed within 30 calendar days , and biweekly thereafter, until one of the following conditions are met:
 - (a) THREE CONSECUTIVE MULTIPLE-DILUTION TESTS PASS. No further tests need to be performed until next regularly scheduled test period.
 - (b) A TOTAL OF THREE MULTIPLE-DILUTION TESTS FAIL.

D. SPECIAL CONDITIONS (continued)

9. Whole Effluent Toxicity (WET) (continued)

(a) Test Schedule and Follow-Up Requirements (continued)

- (3) The permittee shall submit a summary of all test results for the test series along with complete copies of the test reports as received from the laboratory to the WPCP, Planning Section, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the third failed test.
- (4) Additionally, the following shall apply upon failure of the third test: A toxicity identification evaluation (TIE) or toxicity reduction evaluation (TRE) is automatically triggered. The permittee shall contact WPCP, Planning Section to ascertain as to whether a TIE or TRE is appropriate. The permittee shall submit a plan for conducting a TIE or TRE to the Planning Section of the WPCP within 60 calendar days of the date of DNR's direction to perform either a TIE or TRE. This plan must be approved by DNR before the TIE or TRE is begun. A schedule for completing the TIE or TRE shall be established in the plan approval.
- (5) Upon DNR's approval, the TIE/TRE schedule may be modified if toxicity is intermittent during the TIE/TRE investigations. A revised WET test schedule may be established by DNR for this period.
- (6) If a previously completed TIE has clearly identified the cause of toxicity, additional TIEs will not be required as long as effluent characteristics remain essentially unchanged and the permittee is proceeding according to a DNR approved schedule to complete a TRE and reduce toxicity. Regularly scheduled WET testing as required in the permit, without the follow-up requirements, will be required during this period.
- (7) All failing test results shall be reported to WPCP, Planning Section, P.O. Box 176, Jefferson City, MO 65102 within 14 calendar days of the availability of the results.
- (8) When WET test sampling is required to run over one DMR period, each DMR report shall contain information generated during the reporting period.
- (9) Submit a concise summary of all test results with the annual report.

(b) PASS/FAIL procedure and effluent limitations:

- (1) To pass a single-dilution test, mortality observed in the AEC test concentration shall not be significantly different (at the 95% confidence level; $p = 0.05$) than that observed in the upstream receiving-water control sample. The appropriate statistical tests of significance will be those outlined in the most current USEPA acute toxicity manual or those specified by the MDNR.
- (2) To pass a multiple-dilution test:
 - (a) the computed percent effluent at the edge of the zone of initial dilution, Acceptable Effluent Concentration (AEC), must be less than three-tenths (0.3) of the LC_{50} concentration for the most sensitive of the test organisms; or,
 - (b) all dilutions equal to or greater than the AEC must be nontoxic. Failure of one multiple-dilution test is an effluent limit violation.

D. SPECIAL CONDITIONS (continued)

9. Whole Effluent Toxicity (WET) (continued)

(c) Test Conditions

- (1) Test Type: Acute Static non-renewal
- (2) Test species: Ceriodaphnia dubia and Pimephales promelas (fathead minnow). Organisms used in WET testing shall come from cultures reared for the purpose of conducting toxicity tests and cultured in a manner consistent with the most current USEPA guidelines. All test animals shall be cultured as described in the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms.
- (3) Test period: 48 hours at the "Acceptable Effluent Concentration" (AEC) specified above.
- (4) When dilutions are required, upstream receiving stream water shall be used as dilution water. If upstream water is unavailable or if mortality in the upstream water exceeds 10%, "reconstituted" water will be used as dilution water. Procedures for generating reconstituted water will be supplied by the MDNR upon request.
- (5) Single-dilution tests will be run with:
 - (a) Effluent at the AEC concentration;
 - (b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
 - (c) reconstituted water.
- (6) Multiple-dilution tests will be run with:
 - (a) 100%, 50%, 25%, 12.5%, and 6.25% effluent, unless the AEC is less than 25% effluent, in which case dilutions will be 4 times the AEC, two times the AEC, AEC, 1/2 AEC and 1/4 AEC;
 - (b) 100% receiving-stream water (if available), collected upstream of the outfall at a point beyond any influence of the effluent; and
 - (c) reconstituted water.
- (7) If reconstituted-water control mortality for a test species exceeds 10%, the entire test will be rerun.

SUMMARY OF TEST METHODOLOGY FOR WHOLE-EFFLUENT TOXICITY TESTS

Whole-effluent-toxicity test required in NPDES permits shall use the following test conditions when performing single or multiple dilution methods. Any future changes in methodology will be supplied to the permittee by the Missouri Department of Natural Resources (MDNR). Unless more stringent methods are specified by the DNR, the procedures shall be consistent with the most current edition of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms,

Test conditions for Ceriodaphnia dubia:

Test duration:	48 h
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light, 8 h dark
Size of test vessel:	30 mL (minimum)
Volume of test solution:	15 mL (minimum)
Age of test organisms:	<24 h old
No. of animals/test vessel:	5
No. of replicates/concentration:	4
No. of organisms/concentration:	20 (minimum)
Feeding regime:	None (feed prior to test)
Aeration:	None
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at $p \leq 0.05$)
Test acceptability criterion:	90% or greater survival in controls

Test conditions for (Pimephales promelas):

Test duration:	48 h
Temperature:	25 ± 1°C Temperatures shall not deviate by more than 3°C during the test.
Light Quality:	Ambient laboratory illumination
Photoperiod:	16 h light/ 8 h dark
Size of test vessel:	250 mL (minimum)
Volume of test solution:	200 mL (minimum)
Age of test organisms:	1-14 days (all same age)
No. of animals/test vessel:	10
No. of replicates/concentration:	4 (minimum) single dilution method 2 (minimum) multiple dilution method
No. of organisms/concentration:	40 (minimum) single dilution method 20 (minimum) multiple dilution method
Feeding regime:	None (feed prior to test)
Aeration:	None, unless DO concentration falls below 4.0 mg/L; rate should not exceed 100 bubbles/min.
Dilution water:	Upstream receiving water; if no upstream flow, synthetic water modified to reflect effluent hardness.
Endpoint:	Pass/Fail (Statistically significant Mortality when compared to upstream receiving water control or synthetic control if upstream water was not available at $p \leq 0.05$)
Test Acceptability criterion:	90% or greater survival in controls